

KYOCERA R-451

AM / FM STEREO TUNER / AMPLIFIER

WITH MOS FET HIGH-SPEED POWER AMPS



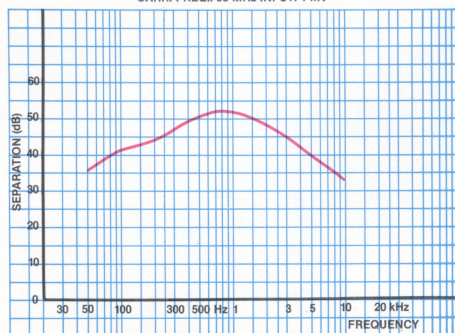
MASTERING THE ART OF SOUND

THE KYOCERA WITH MOS FET SUPERB PERFORMANCE

To enter the beautiful world of FM stereo.

To experience the true quality of FM stereo, you need pinpoint station tuning accuracy that locks in frequency and prevents stronger stations adjacent to the selected frequency from interfering with your choice. You need good separation for full stereo effect, and as little distortion as possible from any source. In every case, the R-451 comes through for you with outstanding FM stereo sound!

FM STEREO CHANNEL SEPARATION
FM ANT TO TAPE OUT
MOD: 100% (75 kHz DEV)
CARR. FREQ.: 99 MHz INPUT: 1 mV



The Kyocera approach to outstanding FM.

At the front end, double-tuned input stages are incorporated with automatic gain controlled dual gate MOS FET's in the RF and mixer stages. Tracking of all tuning circuits is accomplished by the use of variable capacitance diodes to improve spurious response, image and RF intermodulation rejection. High selectivity linear-phase filters smooth out IF response, resulting in overall sonic quality and selectivity.

Station seeking at the touch of a button.

Station tuning is as convenient as pushing a button. When in the auto tuning mode, the tuner automatically stops at the next station. Selection of either a weaker or a stronger station is determined by the low/high mute mode.

Getting in tune with quartz.

The R-451 uses a phase-comparing frequency to lock in the desired frequency. To reduce noise, the phase-comparing frequency is set beyond the bounds of audibility. By the use of quartz synthesized frequency and a servo circuit which detects drift from the desired frequency, correction of any tendency to drift is immediate. Specially designed characteristics of the synthesizer circuit prevent generation of internal beat and interference frequencies and maintain accurate tracking of the tuned frequencies by automatic varactor tuning.

A very quiet non-switching display.

The fluorescent digital frequency display operates from a fixed power source. Displays driven by a dynamic switching type power supply can generate noise which degrades signal-to-noise and distortion ratios. Using a non-switching supply eliminates this problem.

A very special MOS FET power amplifier design.

Having incorporated a clean, noise- and distortion-free FM section, Kyocera engineers complemented it with an exceptional amplifier section. Drawing on

their expertise in large-scale integrated circuitry, they used quality, high tech components, such as high-speed power MOS FET's. They are the new breed of output transistors that can handle the transients, the power surges, the power requirements of present-day sound (and tomorrow's digital sound) better than bipolar transistors ever could. The MOS FET's, used in a complementary configuration, provide outstanding high-speed, low-distortion amplification.

Circuitry for the amplifier section was designed for improved open loop characteristics, using little negative feedback. Restricted use of negative feedback results in low transient intermodulation distortion (TIM). This has been accomplished by MOS FET symmetrical push-pull and 2-pole phase compensation circuits, complemented by a unique safe operating area (SOA) protection circuit with pulse duration and frequency sensing.

Multiple features for greater listening enjoyment.

To provide a truly wide range of operating pleasure, a number of features have been incorporated into the R-451. Provision is made for dual tape monitoring and dubbing from Tape 2 to Tape 1.

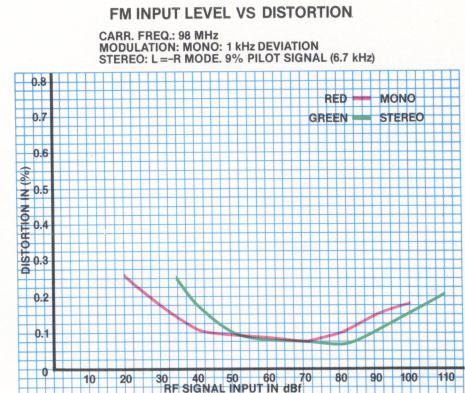
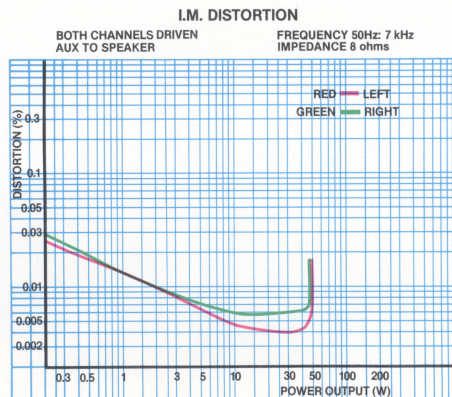
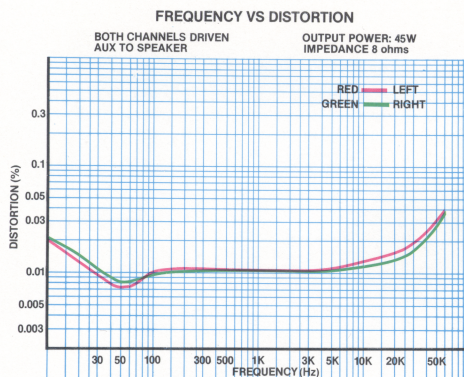
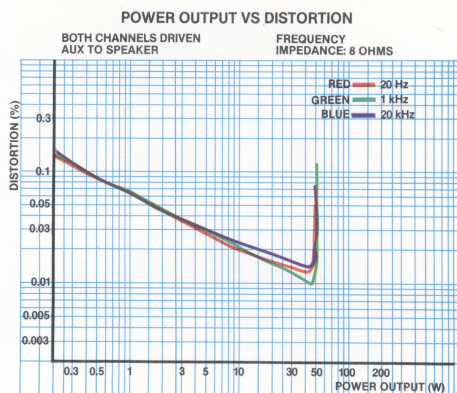
Extraneous noises which may be generated by warped records, turntable rumble or poor record surfaces are dealt with by a subsonic filter of 12 dB/octave and a high filter. Tone controls for bass and treble provide ± 10 dB boost and cut with loudness compensation at 100 Hz and 10 kHz.

CERA R-451 T POWER AMPS. CE-MODERATE PRICE.

The specs behind the exceptional sound.

Behind the R-451's gunmetal brushed aluminum exterior is very advanced circuitry. And out of the circuitry come some specifications that clearly demonstrate what great sound is all about:

Kyocera engineering results in power output of 45 watts RMS per channel, both channels driven into 8 ohms from 20-20,000 Hz with no more than 0.015% THD. Total harmonic distortion at rated output is 0.015% and intermodulation distortion at rated output is 0.015%.



Signal to noise ratios, A weighted, are 80 dB for phono; 95 dB for other inputs.

In the FM mode, distortion is 0.09% mono; 0.15% stereo and frequency response is 30-15,000 Hz ± 0 , -1.0 dB. A-weighted S/N is 80 dB mono; 74 dB stereo. AM and FM performance is enhanced by 14 pre-programmable station settings.

All displays, mode and function indicators are LED's, including a three-point signal strength level, station lock indicator and auto tuning indicator.



The complete specification story.

Front panel features

Rotary volume, balance, bass and treble controls.
Input selector—Phono-FM-AM-AUX push type.
Push switches: Tape 1, Tape 2, Tape copy, Tuning-auto/manual, FM mute-hi/lo, Hi filter, Subsonic filter, Mode, Loudness, Tuning-up/down, Memory program 14-station preset, Speakers A, Speakers B, Phones and Power-on/off.
Fluorescent digital display for frequency readout (FM/AM) and memory.
7 LED station preset indicators.
3 signal strength level LED indicators.
Station lock LED indicator.
Stereo LED indicator.
Auto tuning LED indicator.

Electrical specifications

1] Audio

Power output RMS, both channels driven into 8 Ohms with no more than 0.015% THD : 45 watts per channel
from 20-20,000 Hz
Total harmonic distortion (at rated output) : 0.015%
Intermodulation distortion (at rated output) : 0.015%
Power bandwidth (—3dB rated power) : 5-60,000 Hz.
Slew rate : 40 V/ μ sec.
Rise time : 1.5 μ sec.
Input sensitivity (at rated output)
—Phono : 2.5 mV/47 kOhm/100pF.
—Others : 150 mV/30 kOhm.
Maximum input voltage (at 1kHz—0.5% THD)—Phono : 120 mV.

Hum and noise ratio (IHF, short circuited, A-weighted at rated output)
—Phono : 80 dB.
—Others : 95 dB.
Damping factor (8 Ohm, 1 kHz) : 30
Tone control
Bass (at 100 Hz) : ± 10 dB.
Treble (at 10 kHz) : ± 10 dB.
Loudness compensation (volume at —30 dB)
100 Hz : +7 dB.
10 kHz : +3.5 dB.
Subsonic filter (12 dB/oct.) : —3 dB (20 Hz).
High filter (6 dB/oct.) : —6 dB (10 kHz).
Audio mute : —20 dB.
Tape recording output level (at rated input sensitivity) : 130 mV.

2] FM section

Tuning range : 87.5–108 MHz.
Usable sensitivity
Mono : 10.3 dBf/1.8 uv.
50 dB quieting sensitivity
Mono : 17.0 dBf/3.8 uv.
Stereo : 37.2 dBf/39.7 uv.
Capture ratio : 1.2 dB.
Distortion
Mono (1 kHz) : 0.09%.
Stereo (1 kHz) : 0.15%.
Separation (1 kHz) : 48 dB.
Frequency response 30–15,000 Hz : +0/—1.0 dB.
Signal-to-noise ratio (A-weighted)—Mono : 80 dB.
—Stereo : 74 dB.
Stereo threshold : 20 dBf or 40 dBf.
Muting threshold—high : 40 dBf/55 uv.
—low : 20 dBf/5.5 uv.

Selectivity
Alternate channel (± 400 kHz) : 65 dB.
Spurious rejection : 88 dB.
IF rejection : 100 dB.
Image rejection : 70 dB.
Subcarrier rejection ratio : 58 dB.
Recording output : 0.75 V.
Antenna provision : unbalanced 75 Ohm, 300 Ohm adapter.

3] AM section

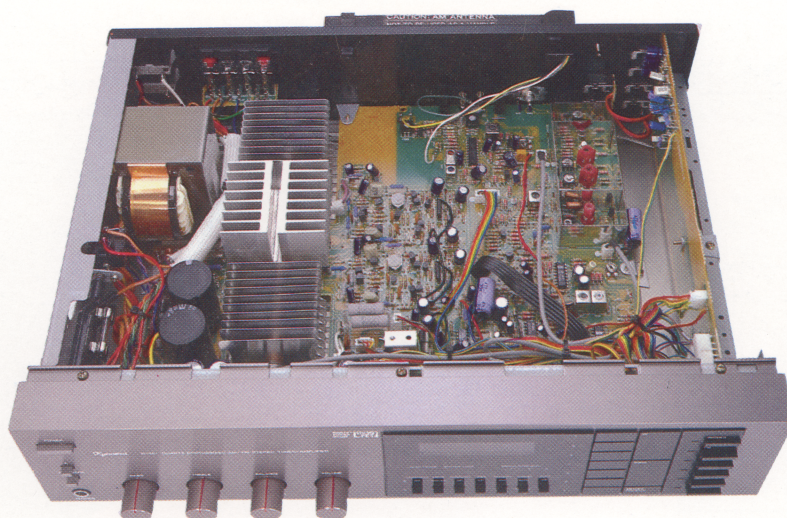
Tuning range : 520–1710 kHz.
Sensitivity
Ferrite antenna (—20 dB S/N) : 300 microvolt/m
Image rejection : 50 dB.
Signal-to-noise ratio : 50 dB.
IF rejection : 85 dB.
Selectivity (± 20 kHz) : 45 dB.
Distortion : 0.3%
Recording output voltage : 0.3 V.
Antenna provisions : a—Adjustable ferrite.
b—External terminal.

Digital control section

Frequency spacing
AM : 10 kHz.
FM : 100 kHz.

General specifications

AC power requirement : AC 120 V 60 Hz.
Power consumption : 110 Watts.
Dimensions
Width : 460 mm (18 $\frac{1}{8}$ ").
Height : 100 mm (4").
Depth : 308 mm (12 $\frac{1}{8}$ ").
Net weight : 18.5 lbs. (8.4 kg).



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